

Maritime Working Group Meeting



December 6, 2001

Long Beach, CA

Air Resources Board

California Environmental Protection Agency

Maritime Air Quality Technical Working Group

- **Forum for on-going communication, cooperation, and coordination**
- **Focus on maritime air quality impacts**
- **Open to all interested parties**
- **Meet semi-annually**
- **Smaller, more frequent, and focused meetings as necessary**

Goals

- **Promote constructive dialogue and active participation**
- **Identify key issues and offer creative solutions**
- **Provide reality check**
- **Provide opportunity to give input on emission reduction strategies**

Agenda

- **Perspective on maritime emissions**
- **Efforts to reduce emissions from commercial marine vessels**
- **Voluntary speed reduction MOU**
- **Proposed future emission reduction Strategies**
- **Topics for future discussions**

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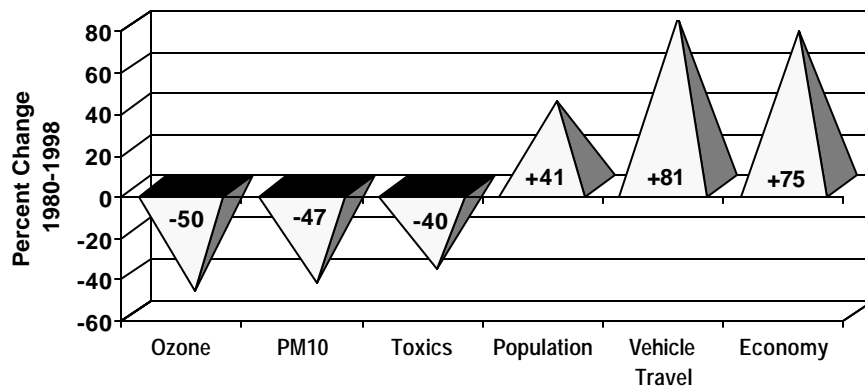
Perspective on Maritime Emissions

Overview

- **Air quality in California**
- **Maritime emissions**
- **NOx and diesel PM contributions from commercial marine vessels**



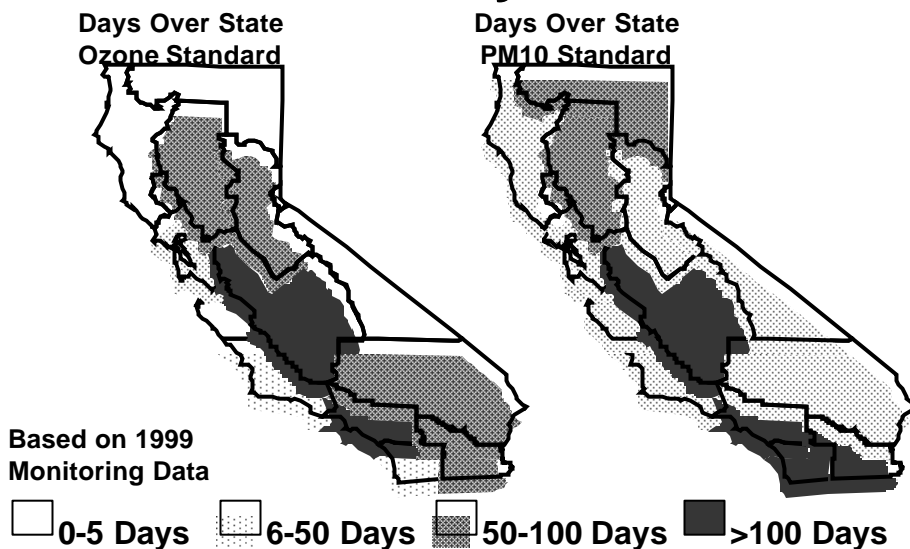
Air Quality Is Improving



Despite Progress Much Left to Do

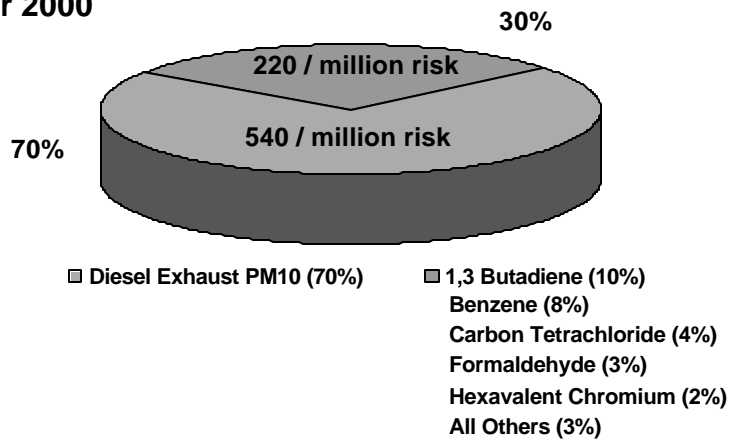
- Over 90% of Californians exposed to unhealthy air
- Additional emission reductions needed to attain air quality standards
- Risk from air toxics is too high

Over 90% of Californians Breathe Unhealthy Air at Times

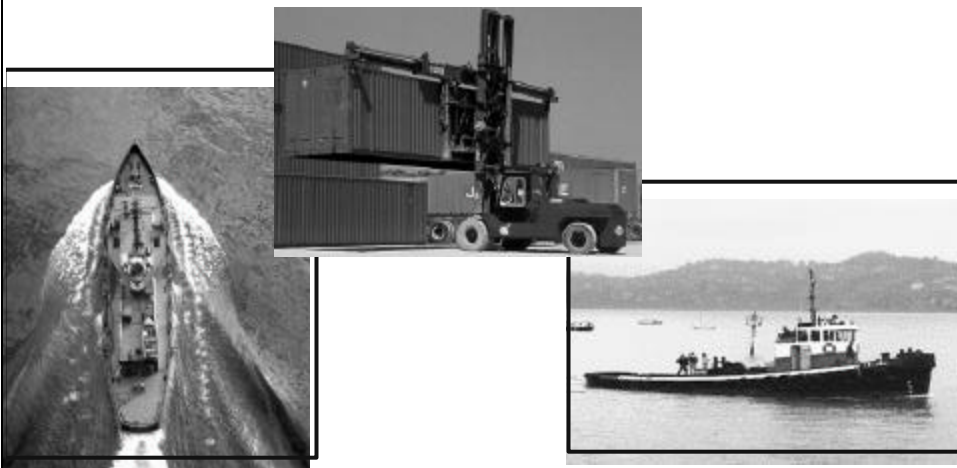


Statewide Air Toxics Risk for Year 2000

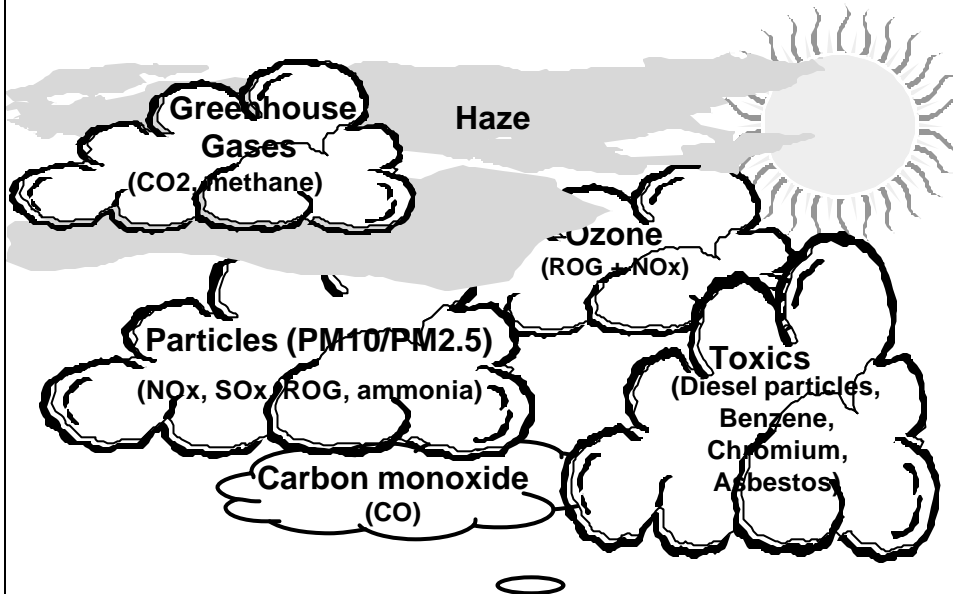
Year 2000



How do Maritime Emissions Fit into California's Air Quality Picture?



What Pollutants Are of Concern?



Emission Sources at Ports: Cargo Handling Equipment

- Yard trucks, RTG cranes, side picks and top picks, forklifts, etc.



Emission Sources at Ports: Land-based Cargo Transportation

- Heavy-duty diesel trucks
- Locomotives



Emission Sources at Ports: Miscellaneous

- Diesel transport refrigeration units and electricity generators
- Storage/Processing/Packaging of raw materials (fuel handling and storage, dust from raw materials)
- Light-duty vehicles



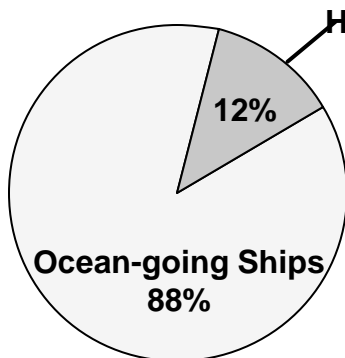
Emission Sources at Ports: Marine Vessels

- Ocean-going vessels (container ships, tankers, cruise ships, etc.)
- Harbor craft (ferries, tugboats, commercial fishing, Coast Guard, etc.)



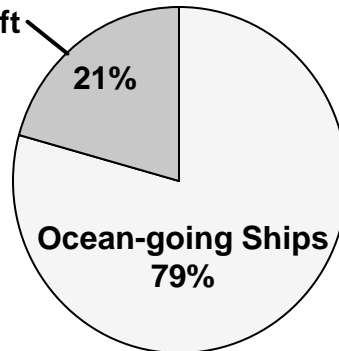
Ocean-going Ships and Harbor Craft

Year 2000 Statewide Diesel PM and NO_x Emissions



Diesel PM

9 TPD Total

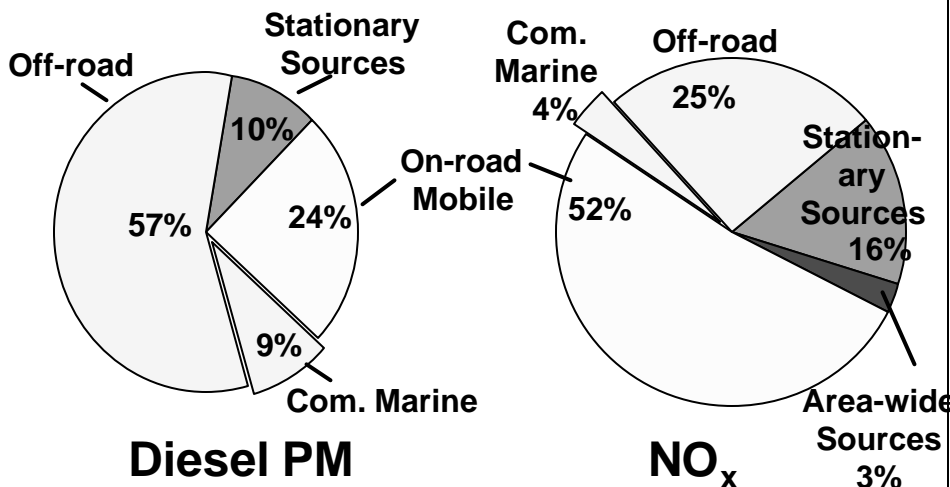


NO_x

101 TPD Total

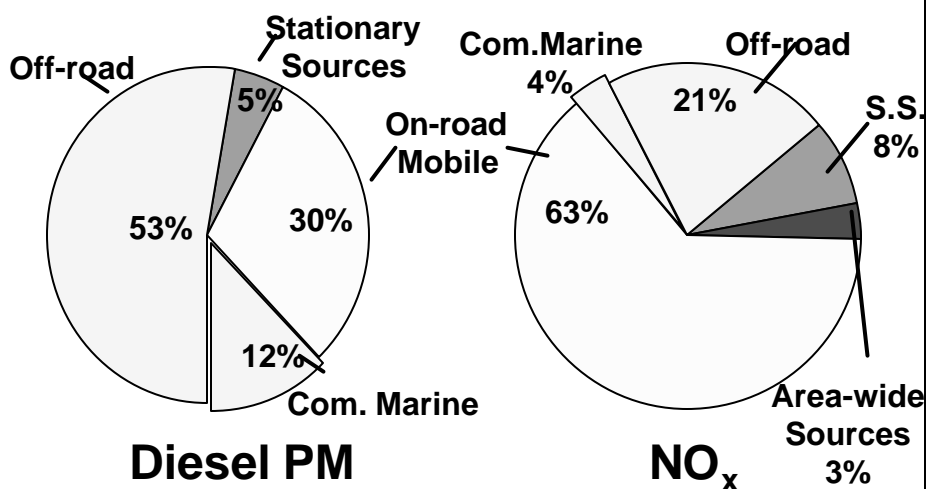
Commercial Marine Vessels are Important Contributors to Diesel PM and NO_x Emissions

Year 2000 Statewide Diesel PM and NO_x Emissions



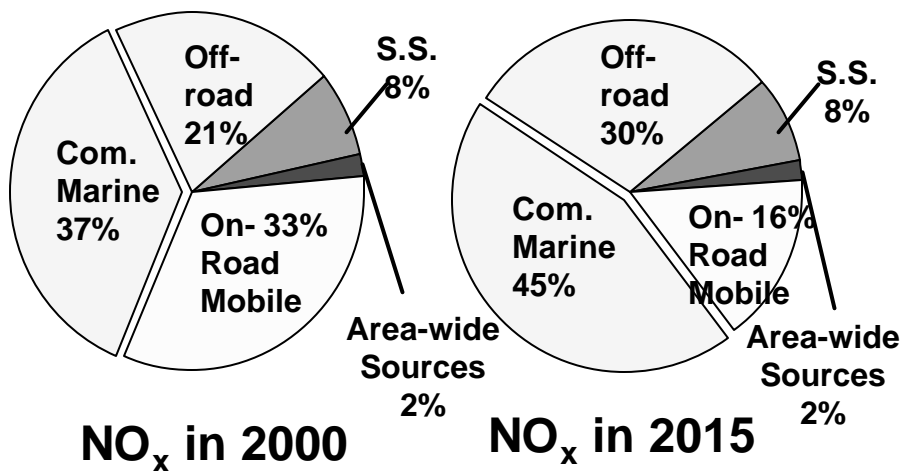
Commercial Marine Vessel Contribution to the South Coast's Diesel PM and NO_x Emissions

Year 2000 SCAQMB's Diesel PM and NO_x Emissions



Commercial Marine Vessel Contribution to Santa Barbara's NO_x Emissions

Year 2000 SBCAPCD's Diesel PM and NO_x Emissions



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***Efforts to Reduce Emissions
from Commercial Marine
Vessels***

Existing Emission Reduction Strategies for Commercial Marine Vessels

- **New Engines**
 - IMO standards
 - National regulation
- **In-Use Engines**
 - Carl Moyer Program
 - NOx and PM Emission Reduction Program
 - Local district programs
 - Voluntary speed reduction MOU

Voluntary Speed Reduction MOU

- Applies to ocean-going ships
- Ships requested to voluntarily reduce speed to 12 knots within 20 miles of the Ports of Los Angeles/Long Beach
- MOU will reduce NOx emissions by 2-4 TPD in the SCAB with full compliance

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Proposed Future Emission Reduction Strategies

Overview

- **ARB's goal**
- **ARB's Clean Air Plan**
- **Proposed measures for commercial marine vessels**

ARB's Goal

Ensure all individuals in California, especially children and the elderly, can live, work and play in a healthful environment -- free from harmful exposure to air pollution



Strategies for a Healthy Future: ARB's Clean Air Plan

- **Plan for reducing criteria and toxic pollutants from every source**



Timeframes for Plan Strategies

- **Near-term (until 2005)**
 - Improve community health
 - Meet federal ozone & PM10 standards
- **Mid-term (2005 - 2010)**
 - Reduce diesel particulates by 75%
 - Meet federal ozone std. in South Coast
- **Long-term (post-2010)**
 - Attain State standards
 - Address emissions growth

Schedule for Clean Air Plan

May 2001:	Hold emission reduction concepts workshop
February 2002:	Release draft Plan
Spring 2002:	Hold workshops on draft Plan
Late Spring:	Present Plan to Board for consideration and approval

Proposed Clean Air Plan Measures for Commercial Marine Vessels

- **Shared regulatory responsibility**
- **Measures implemented statewide**
- **Measures subject to public comment
and commercial and technological
feasibility analysis**

Applicability of Proposed Clean Air Plan Measures

- **Ocean-going ships**
 - **International trade vessels: container ships,
bulk carriers, general cargo, tankers, auto
carriers**
 - **Cruise ships**
- **Harbor Craft (“Captive Fleet”)**
 - **Tugboats and fishing vessels**
 - **Excludes recreational craft**

Proposing Four Measures

- **Measures:**
 - Revised National/International New Engine Standards
 - In-Use Emissions from Harbor Craft
 - In-Use Emissions from Oceangoing Ships
 - Advanced Technology & Innovative Strategies
- **Evaluating Different Control Options under each Measure**
- **Emission Reduction Targets to be Developed**

Measure - National & International New Engine Standards

- **Revise IMO Standards**
- **Revise U.S. EPA “Tier II” National Harbor Craft Standards**
- **Adopt U.S. EPA Standards for Oceangoing Ships**
- **Mid-term Measure, 2005-2010**
- **U.S. EPA lead agency**

Revise IMO Standards

- **Ratify current IMO Standards**
- **Propose more stringent IMO standards for NO_x**
- **Propose IMO standards for particulate matter and hydrocarbons**

Revise Federal Standards for Harbor Craft

- **Propose more stringent U.S. EPA standards**
- **Propose that rebuilt engines be subject to federal standards**

Establish Emission Limits for Ocean-Going Vessels

- **U.S. EPA establish standards for new diesel engines as required by lawsuit settlement**
- **Final action on proposed rulemaking required by Jan 31, 2003**
- **Rulemaking void if IMO standards become effective**

Measure - Reduce In-Use Emissions from Harbor Craft

- **Add-on Control Equipment**
- **Use of Cleaner Fuels**
- **Combinations of both**
- **Near-Term, 2005**
- **ARB lead agency**

Add-on Control Equipment

- **Use of add-on exhaust treatment technologies to reduce in-use emissions**
- **Water injection**
- **Potential for large diesel PM and NOx emission reductions**

Use of Cleaner Fuels

- **CARB On-road diesel fuel**
- **Emulsified diesel fuel**
- **Alternative fuels (i.e. CNG, bio-diesel)**
- **Combine Cleaner fuels with add-on control equipment**

Navy Pilot Retrofit Program

- **ARB in process of co-funding program with Navy, DOE, and EPA**
- **Program will evaluate several potential retrofit control technologies**
- **Research will help focus on technologies that could be used on harbor craft**

Measure - Reduce In-Use Emissions from Oceangoing Ships

- **Require Use of Cleaner Fuels**
- **Opacity Limits**
- **Incentive Programs**
- **Mid-term, 2005-2010**
- **EPA/ARB lead agencies**

Use of Cleaner Fuels in California Coastal Waters

- **Use cleaner fuels in California coastal waters**
- **Sweden provides economic incentives to ships using lower sulfur fuel in their ports**
- **Mid-term measure, implementation 2005-2010**

Opacity Requirements in California Coastal Waters

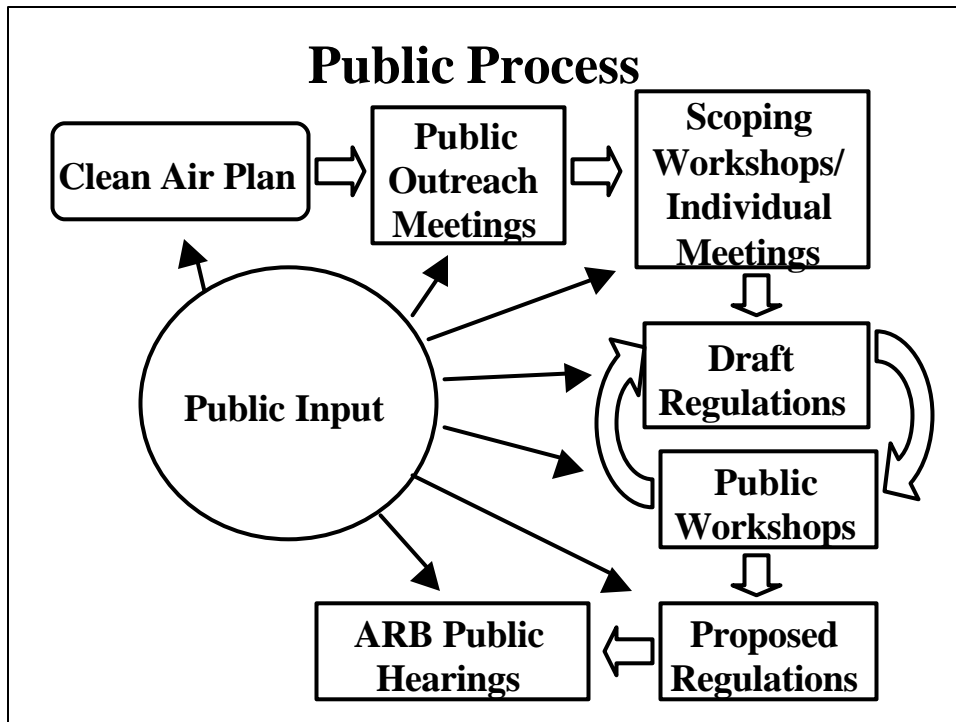
- **Establish program to reduce visible smoke emissions**
- **Apply to vessels in California Coastal Waters**
- **Mid-term measure, implementation 2005-2010**

Incentive Programs

- **Establish incentive program to encourage use of lower emitting ocean-going vessels**
- **Success more likely if implemented beyond California**
- **Variety of options to be explored**
- **Mid-term measure, implementation 2005-2010**

Measure - Advanced Technologies & Innovative Strategies

- **Both Harbor Craft and Oceangoing**
- **Fuel Cells/Solar Power**
- **Cold Ironing**
- **Operational Controls**
- **Long-term, post 2010**
- **State, Local, and National Collaboration**



ARB Contacts

- **Commercial Marine Vessels**
 - Peggy Taricco, Manager, Technical Analysis Section
 - 327-7213, ptaricco@arb.ca.gov
 - Paul Milkey, Staff, Technical Analysis Section
 - 327-2957, pmilkey@arb.ca.gov
- **Off-Road Mobile Sources**
 - Jackie Lourenco, Manager, Off-Road Controls Section
 - (626) 575-6676, jlourenc@arb.ca.gov